

Meeting with EPA Region VII

1- HR SO₂ Attainment SIP Requirements
for the Herculaneum Area

May 22, 2014

Meeting Agenda

- ◆ Review recent REGFORM activities with regard to the Herculaneum 1- hr SO₂ Non-attainment area
- ◆ Present results of data collection and analysis efforts
- ◆ Discuss an option for developing a timely attainment demonstration
- ◆ Answer any questions about the data and analysis

REGFORM Perspective

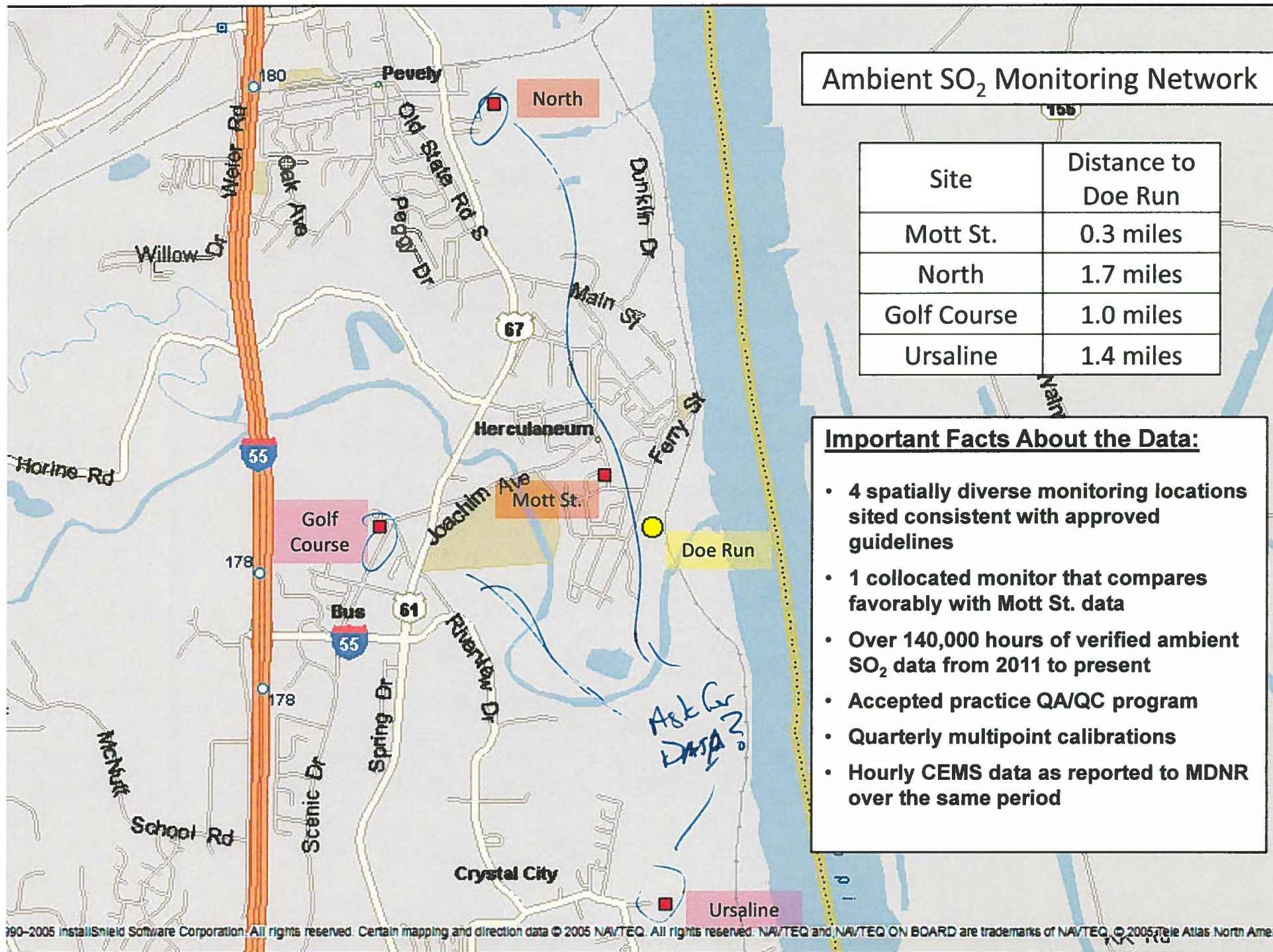
used City Bell & Mott St
monitors to make longer
time record

- ◆ The new 1- hour standard raises many complex issues with far reaching implications for REGFORM members.
- ◆ The Mott St. monitor was the sole driver for the Herculaneum designation.
- ◆ The permanent shutdown of the Doe Run Smelter in Herculaneum in December 2013 has had a profound impact on local air quality.
- ◆ This creates a very unique set of circumstances which provides the opportunity for an alternative but consistent approach to the attainment demonstration.
- ◆ Analysis of data from the Herculaneum monitoring network and other factors provide clear evidence that the air quality in the area is now well below the standard.
- ◆ Only time is needed to officially demonstrate actions already taken bring the area into attainment.
- ◆ Larger emitters will still be reviewed under a Phase 2 designation process along with all the other large emitters around the country.

So What Are the Relevant Data Sets and How Robust Are They?

- ◆ To take a closer look at the local air quality we obtained historical Mott St. monitor and met data from MDNR
- ◆ We also requested and obtained emissions, ambient air quality, and met data from Doe Run
- ◆ The following describes the available data and orientation

Air Qual Data
2011 - Today



Source: MDNR 2013 Monitoring Network Plan dated May 23, 2013

Herculaneum, Mott Street

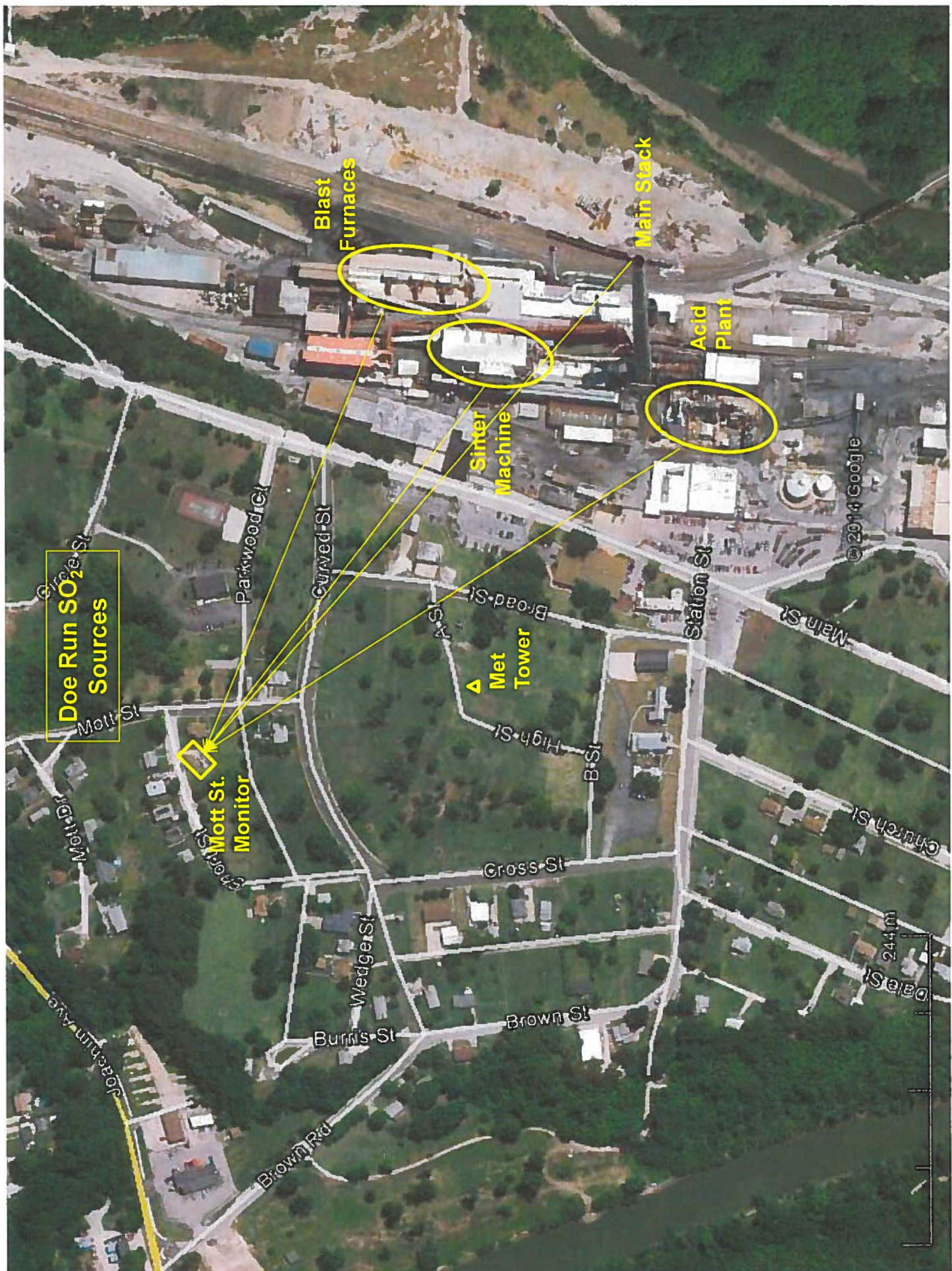
AQS Site Number **29-099-0027**

Mott Street, Herculaneum, MO, 63048

Latitude: 38.263394 AQCR: 070 Metropolitan St. Louis
Longitude: -90.379667 MS4: 7040 St. Louis, MO-IL
Elevation (ft): 468

Mott St - hot spot for lead not sure about SO₂

Pollutant	AQS Code	Monitor-Type	POC	Col	Freq	Scale	State-Obj	Unit-Code	Unit	Method-Code	Method	Monitor-Objective
Ambient Temperature	68105	SPM	1	<input checked="" type="checkbox"/>	1/1	N/A	COM	017	deg C	780	Instrumental	Other
Indoor Temperature	62107	SPM	1	<input type="checkbox"/>	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Lead (TSP) - LC FRM/FEM	14129	SLAMS	1	<input checked="" type="checkbox"/>	1/1	MID	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented & Highest Concentration
Sample Baro Pressure	68108	SPM	1	<input checked="" type="checkbox"/>	1/1	N/A	COM	059	mm (Hg)	780	Instrumental	Other
Sulfur Dioxide	42401	SLAMS	1	<input type="checkbox"/>	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented & Highest Concentration
Sulfur Dioxide Max 5-min Avg	42406	SPM	1	<input type="checkbox"/>	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented & Highest Concentration
Wind Direction - Resultant	61104	SPM	1	<input type="checkbox"/>	1	N/A	MET	014	deg	067	Instrumental: RM Young Mod 05103	Other
Wind Speed - Resultant	61103	SPM	1	<input type="checkbox"/>	1	N/A	MET	012	mph	067	Instrumental: RM Young Mod 05103	Other



Impacts Result from Sources Close to the Monitor

- ◆ ... from an air quality management perspective, the SO₂ NAAQS can be considered to be a largely “source-oriented” NAAQS rather than a “regional” one (i.e., more similar to the lead NAAQS than to the ozone NAAQS). Strategies to attain the SO₂ NAAQS are expected to be focused on key point sources. (Page 10)
- ◆ The EPA and the air quality management community have recognized over many years that peak concentrations of SO₂ are commonly caused by one or a few major point sources in an area and peak concentrations are typically observed relatively close to the source. (Page 13)
- ◆ ... maximum concentrations can be expected to be observed within 1-2 miles of some large power plants and other facilities. (Page 9)

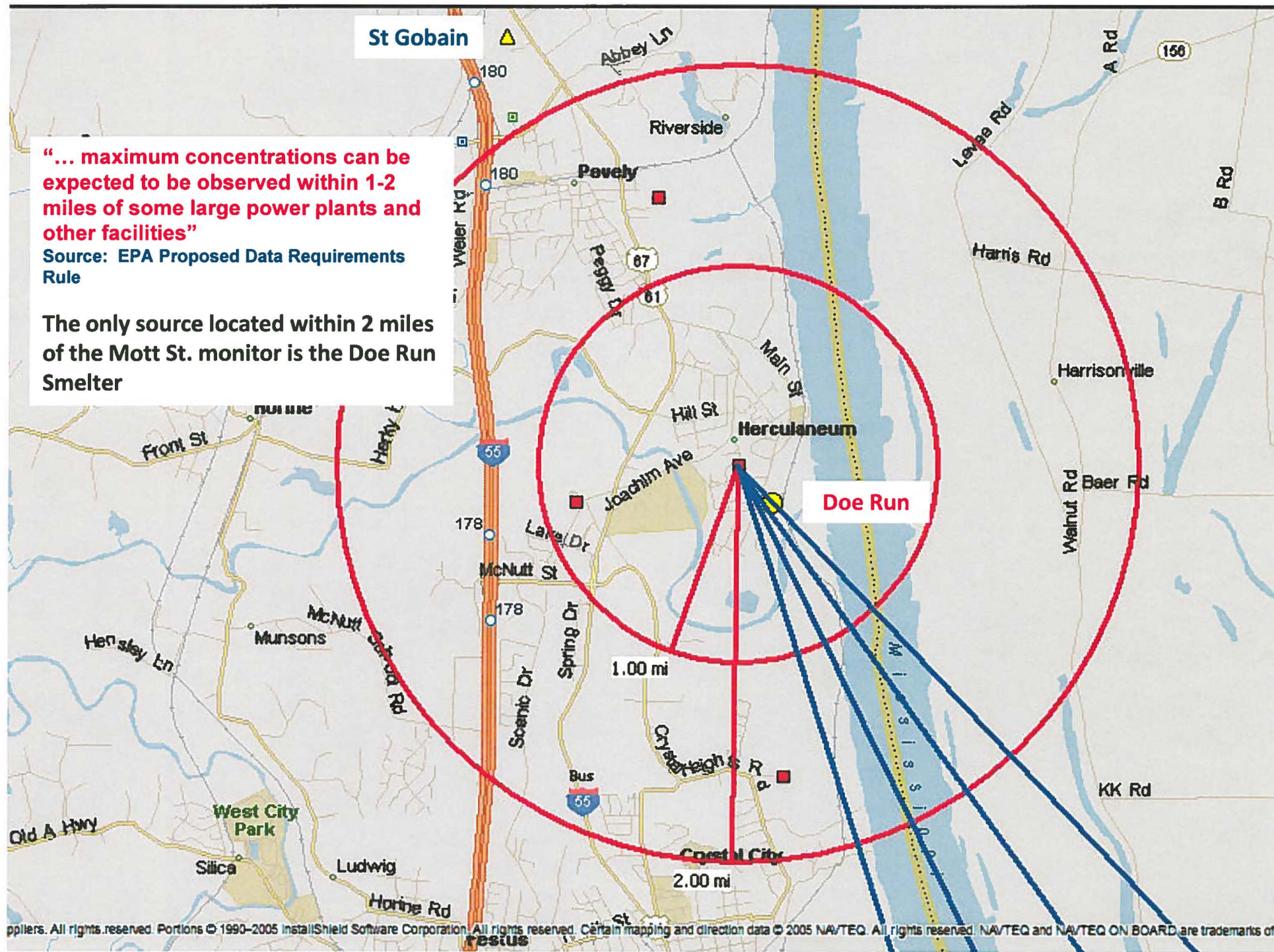
Source: EPA Proposed Data Requirements Rule – April 17, 2014

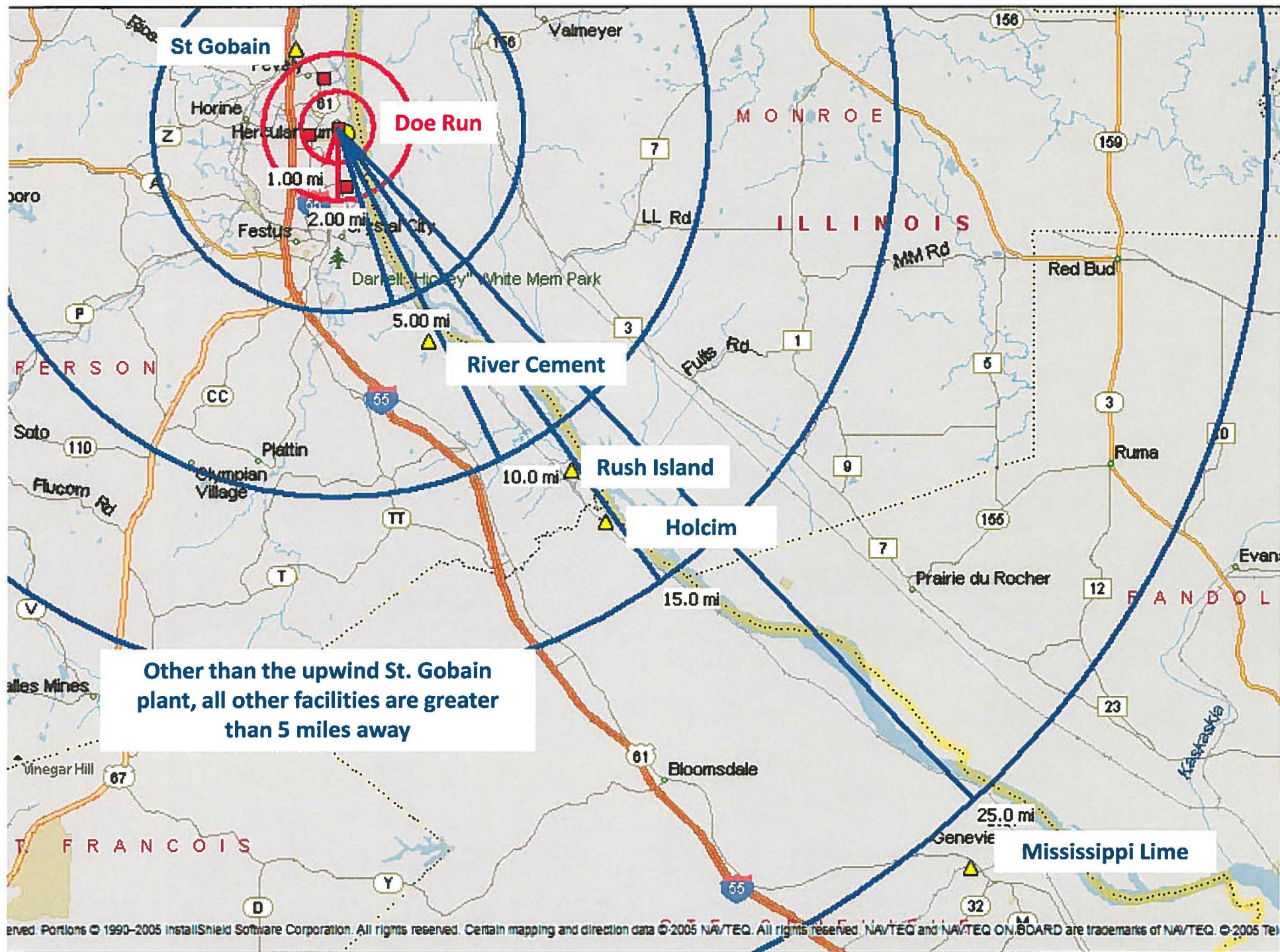
St Gobain

"... maximum concentrations can be expected to be observed within 1-2 miles of some large power plants and other facilities"

Source: EPA Proposed Data Requirements Rule

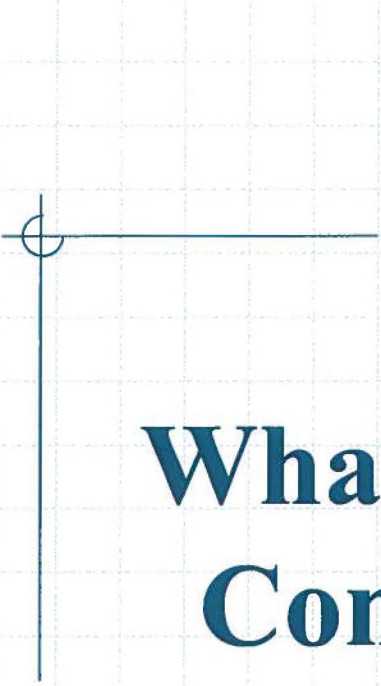
The only source located within 2 miles of the Mott St. monitor is the Doe Run Smelter





What Do We Know About Doe Run?

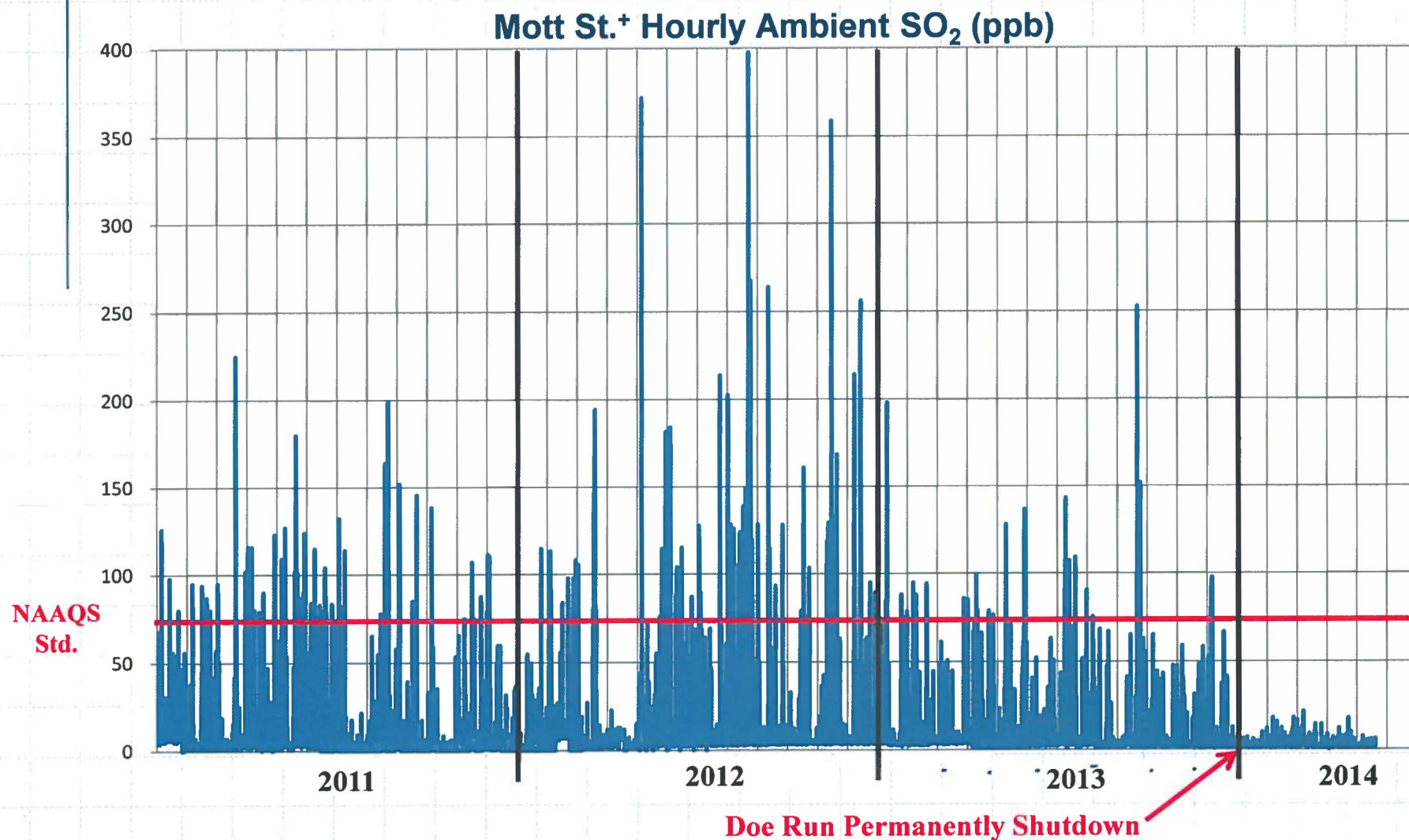
- ◆ It was a large multi-point source of SO₂ emissions with hourly SO₂ emission rates sometimes exceeding 10,000 lb/hr *Annual emissions ~~at~~ Other facilities*
- ◆ It was close to and upwind of the Mott St. monitor
- ◆ It was permanently shutdown as of January 1, 2014
- ◆ The shutdown is federally enforceable
- ◆ The shutdown has had a fundamental and unmistakably positive impact on the local air quality



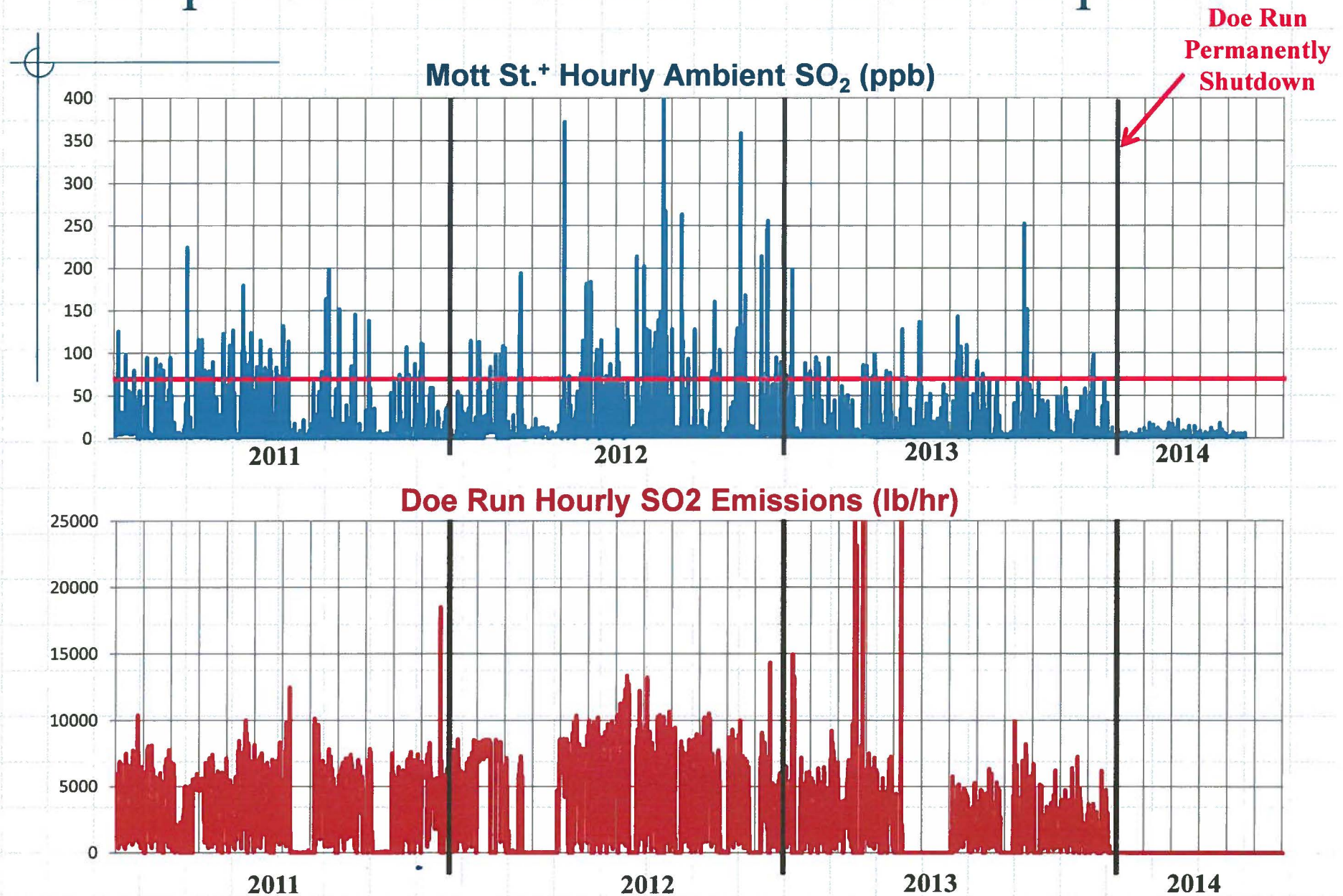
What Does An Analysis of the Comprehensive Multi-Year Data Set Indicate?

Comparison – Before and After Shutdown

Current Mott St. monitoring indicates attainment will be demonstrated by December 31, 2015

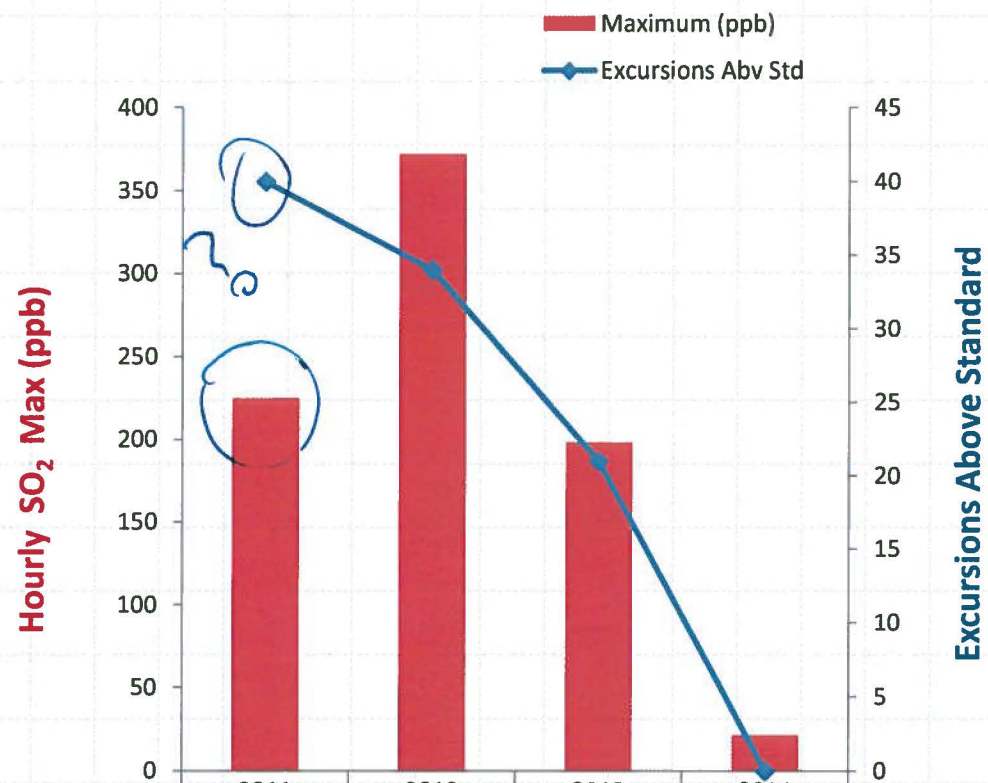


Comparison – Emissions vs. Ambient Impacts

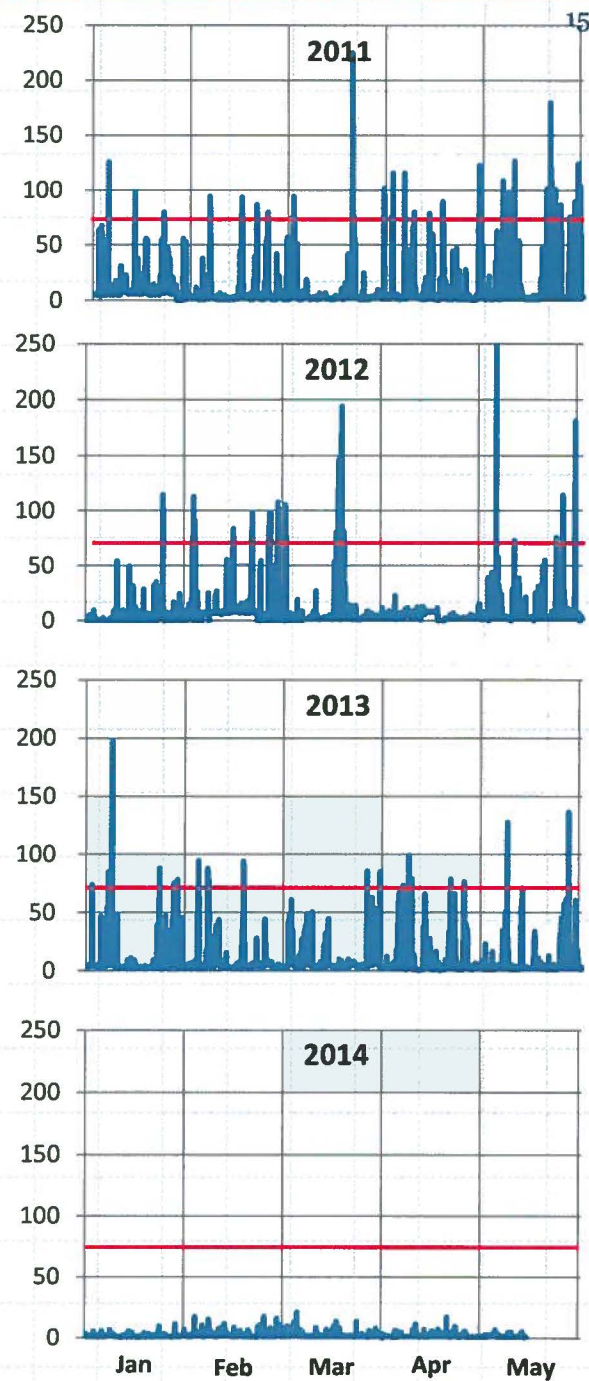


4 Year Comparison of Like Periods

4 Year Comparison - Jan 1 to May 15

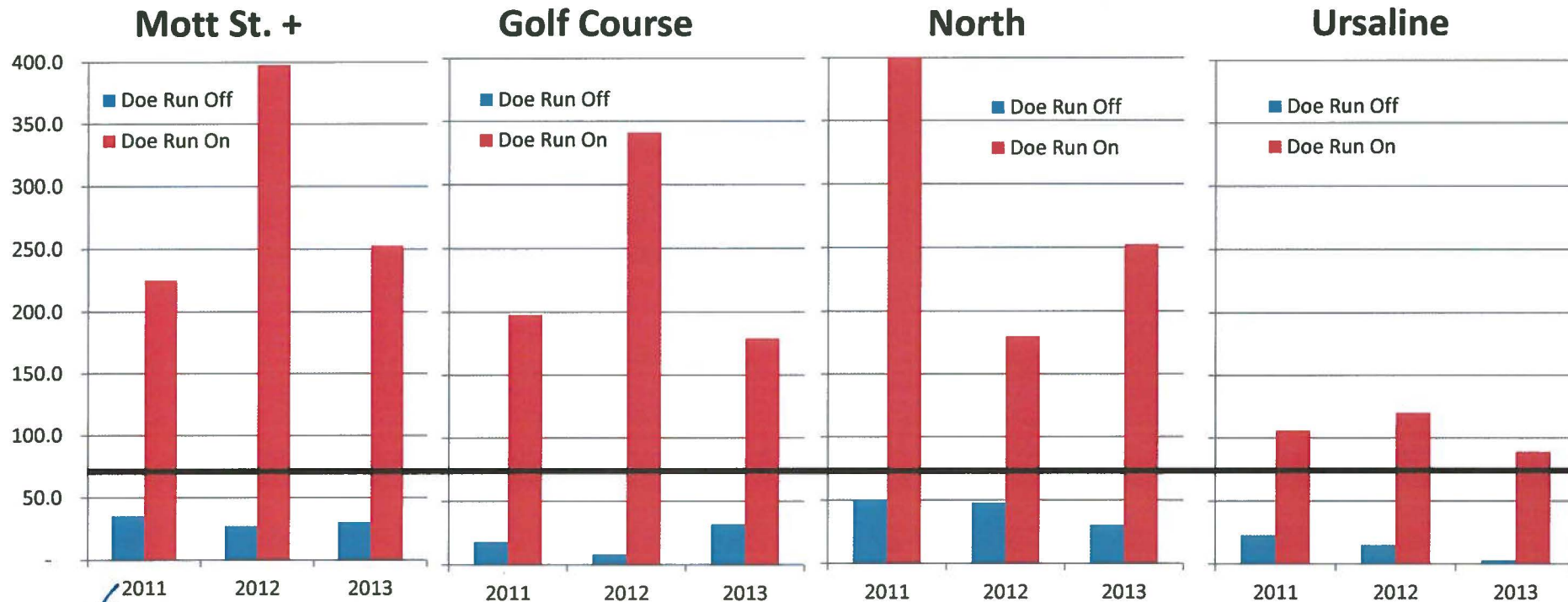


Maximum (ppb)	225.0	372.1	198.2	21.7
Excursions Abv Std	40	34	21	0



What Is the Air Quality When the Doe Run Smelter is Not Operating?

Maximum SO₂ value (ppb) recorded at each station
2011 - 2013



Over 140,000 hours of monitoring

When the Doe Run smelter was not operating there was not a single hour when a monitor recorded a value above the standard.

When the Doe Run smelter was operating, these same monitors recorded values in excess of the standard 437 times.

10% of time
over entire 12 mos.
(2011-2013)

operating status for other
facilities during blue bar time

Conclusion:

The Herculaneum Site is a Unique Circumstance

- ◆ The area was classified non-attainment based on the high Mott St monitor readings
- ◆ The monitor was sited to record maximums from the Doe Run Smelter
- ◆ The robust monitoring network around the site clearly indicates that the Doe Run Smelter was the sole cause of the NAAQS violations recorded at the Mott St location
- ◆ Since Jan 1, 2014 the Mott St. monitor has been reading at or near background levels on a consistent basis

And There Are More SO₂ Controls to Come

- The Supreme Court has reinstated the CSAPR
- The Appeals Court has rejected challenges to the Utility MATS
- The Industrial Boiler MACT is being implemented
- The source in next closest proximity to the nonattaining monitor, St. Gobain, is also subject to a federally enforceable Consent Decree that required the installation of control equipment in 2013 that has reduced SO₂ emissions from the facility by over 90 percent
- SO₂ emissions from other significant sources in the general vicinity of the Herculaneum NAA will be evaluated for possible reductions to comply with the 1-hour SO₂ NAAQS in the Phase 2 review process
- A proposed settlement with Sierra Club and NRDC will require a middle round of area designations based on new monitoring and/or 2012 power plant emissions



Assess
of SO₂ emissions
over predicting
on short-term

Questions?

Att strategy that includes C.D. for
Doc Pen + Clendate
S-810 to ~~renew~~
lean ctt &
redesign

big issue
Would Bush Island
be given a pass
in round 2?

Source
Commitment
by MO to
put Bush Island
through
Phase II

Phase II review of
these sources would
give more time for
better controls